CASE STUDY

CRIME TABLE

	CrimeID	IncidentType	IncidentDate	Location	Description	Status
▶	1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open
	2	Homicide	2023-09-20	456 Elm St, Townsville	Investigation into a murder case	Under Investigation
	3	Theft	2023-09-10	789 Oak St, Villagetown	Shoplifting incident at a mall	Closed
	4	Assault	2024-04-10	101 Park Ave, Downtown	Assault incident in a nightclub	Open
	5	Burglary	2024-04-12	222 Pine St, Suburbia	Residential burglary reported	Closed
	6	Vandalism	2024-04-14	333 Maple St, Uptown	Property damage to public park	Open
	7	Fraud	2024-04-16	444 Cedar St, Countryside	Identity theft case under investigation	Under Investigation
	8	Drug Possession	2024-04-18	555 Walnut St, Metropolis	Drug possession arrest made	Closed
	9	Assault	2024-04-20	666 Oak St, Riverside	Assault reported at a bar	Open
	10	Robbery	2024-04-22	777 Birch St, Hillside	Robbery at a convenience store	Open
	11	Homicide	2024-04-24	888 Cherry St, Lakeside	Investigation into a murder case	Under Investigation
	12	Theft	2024-04-26	999 Elm St, Mountainside	Shoplifting incident at a retail store	Closed
	13	Fraud	2024-04-28	111 Ash St, Seaside	Credit card fraud investigation	Under Investigation
*	NULL	NULL	NULL	NULL	NULL	NULL

VICTIM TABLE

VictimID	CrimeID	Name	ContactInfo	Injuries	Age
1	1	John Doe	johndoe@example.com	Minor injuries	40
2	2	Jane Smith	janesmith@example.com	Deceased	37
3	3	Alice Johnson	alicejohnson@example.com	None	49
4	4	Michael Johnson	michaeljohnson@example.com	Moderate injuries	51
5	5	Sarah Lee	sarahlee@example.com	None	27
6	6	David Brown	davidbrown@example.com	Property damage	29
7	7	Emily Davis	emilydavis@example.com	Financial loss	45
8	8	Michael Smith	michaelsmith@example.com	None	58
9	9	Emma Wilson	emmawilson@example.com	Minor injuries	76
10	10	James Taylor	jamestaylor@example.com	None	64
11	11	Olivia Martinez	oliviamartinez@example.com	Deceased	75
12	12	Ethan Anderson	ethananderson@example.com	None	40
13	13	Sophia Hernandez	sophiahernandez@example.com	Financial loss	19
NULL	NULL	NULL	NULL	NULL	NULL

SUSPECT TABLE

SuspectID	CrimeID	Name	Description	CriminalHistory	SAge
1	1	Robber 1	Armed and masked robber	Previous robbery convictions	78
2	2	Unknown	Investigation ongoing	NULL	73
3	3	Suspect 1	Shoplifting suspect	Prior shoplifting arrests	50
4	4	Assailant 1	Physical altercation suspect	Previous assault charges	75
5	5	Burglar 1	Suspected burglar	Prior burglary convictions	24
6	6	Vandalizer 1	Vandalism suspect	History of vandalism	63
7	7	Fraudster 1	Identity theft suspect	Prior fraud arrests	42
8	8	Drug Dealer 1	Suspected drug dealer	Drug trafficking charges	63
9	9	Assailant 2	Assault suspect	Previous assault charges	49
10	10	Robber 2	Suspected robber	Prior robbery convictions	40
11	11	Unknown	Investigation ongoing	NULL	37
12	12	Shoplifter 1	Suspected shoplifter	History of shoplifting	46
13	13	Fraudster 2	Credit card fraud suspect	Prior fraud arrests	42
NULL	NULL	NULL	NULL	NULL	NULL

TASKS:

1. Select all open incidents.

select * from Crime where Status="Open";

```
78 •    select * from Crime where Status="Open";
```

CrimeID	IncidentType	IncidentDate	Location	Description	Status
1	Robbery	2023-09-15	123 Main St, Cityville	Armed robbery at a convenience store	Open
4	Assault	2024-04-10	101 Park Ave, Downtown	Assault incident in a nightclub	Open
6	Vandalism	2024-04-14	333 Maple St, Uptown	Property damage to public park	Open
9	Assault	2024-04-20	666 Oak St, Riverside	Assault reported at a bar	Open
10	Robbery	2024-04-22	777 Birch St, Hillside	Robbery at a convenience store	Open
NULL	NULL	NULL	NULL	NULL	NULL

2. Find the total number of incidents.

select count(IncidentType) as Total from Crime;

```
79 •    select count(IncidentType) as Total from Crime;
```

Total
13

3. List all unique incident types.

select IncidentType from Crime group by IncidentType;

```
80 •    select IncidentType from Crime group by IncidentType;
```

IncidentType
Robbery
Homicide
Theft
Assault
Burglary
Vandalism
Fraud
Drug Possession

4. Retrieve incidents that occurred between '2023-09-01' and '2023-09-10'.

select CrimeId, IncidentType, IncidentDate from Crime where IncidentDate between '2023-09-01' and '2023-09-10'

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81 •    select CrimeId, IncidentType, IncidentDate from Crime where IncidentDate between '2023-09-01' and '2023-09-10'
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

CrimeId	IncidentType	IncidentDate
3	Theft	2023-09-10

5. List persons involved in incidents in descending order of age.
select VictimId,CrimeID,NAme,Age from Victim order by Age desc;

VictimId	CrimeID	NAme	Age
9	9	Emma Wilson	76
11	11	Olivia Martinez	75
10	10	James Taylor	64
8	8	Michael Smith	58
4	4	Michael Johnson	51
3	3	Alice Johnson	49
7	7	Emily Davis	45
1	1	John Doe	40
12	12	Ethan Anderson	40
2	2	Jane Smith	37
6	6	David Brown	29
5	5	Sarah Lee	27
13	13	Sophia Hernandez	19

6. Find the average age of persons involved in incidents.
select round(avg(Age)) as Average_Age from Victim;

Average_Age
47

7. List incident types and their counts, only for open cases.
select IncidentType, count(IncidentType) from Crime where Status='Open' group by IncidentType;

```
82 •    select IncidentType, count(IncidentType) from Crime where  Status='Open' group by IncidentType;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

IncidentType	count(IncidentType)
Robbery	2
Assault	2
Vandalism	1

8. Find persons with names containing 'Doe'.

Select * from Victim where Name like '%Doe%';

```
83 •    select * from Victim where Name like '%Doe%';
```

VictimID	CrimeID	Name	ContactInfo	Injuries
1	1	John Doe	johndoe@example.com	Minor injuries
NULL	NULL	NULL	NULL	NULL

9. Retrieve the names of persons involved in open cases and closed cases.

select Victim.CrimeID, Victim.Name from Victim inner join Crime on Victim.CrimeID=Crime.CrimeID where Crime.status='Open' or Status='Close';

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84 •    select Victim.CrimeID, Victim.Name from Victim inner join Crime on Victim.CrimeID=Crime.CrimeID where Crime.status='Open' or Status='Close';
```

CrimeID	Name
1	John Doe
4	Michael Johnson
6	David Brown
9	Emma Wilson
10	James Taylor

10. List incident types where there are persons aged 30 or 35 involved.
select c.IncidentType FROM Crime c join (SELECT CrimeID FROM Victim WHERE Age IN (30, 35)
    UNION
    SELECT CrimeID FROM Suspect WHERE SAge IN (30, 35)) AS incident_ids ON c.CrimeID = incident_ids.CrimeID;

IncidentType

11. Find persons involved in incidents of the same type as 'Robbery'.
select Victim.Name , Crime.IncidentType from Victim Join Crime on Victim.CrimeID=Crime.CrimeID where IncidentType='Robbery';

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87 •    select Victim.Name , Crime.IncidentType from Victim Join Crime on Victim.CrimeID=Crime.CrimeID where IncidentType='Robbery';
88
```

Name	IncidentType
John Doe	Robbery
James Taylor	Robbery

12. List incident types with more than one open case.

select IncidentType, Count(Status) as Total from Crime group by IncidentType Having Total>=2

```
88 •    select IncidentType, Count(Status) as Total from Crime group by IncidentType Having Total>=2
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ‡A

IncidentType	Total
Robbery	2
Homicide	2
Theft	2
Assault	2
Fraud	2

13. List all incidents with suspects whose names also appear as victims in other incidents.

select c.IncidentType, s.Name from Crime c JOIN Suspect s ON c.CrimeID = s.CrimeID JOIN Victim v ON s.Name = v.Name;

Result Grid | Filter Rows: | Expo

IncidentType	Name

14. Retrieve all incidents along with victim and suspect details.

SELECT c.CrimeID,c.IncidentType, v.Name AS VictimName,
    s.Name AS SuspectName, s.CriminalHistory AS SuspectCriminalHistory
FROM Crime c
LEFT JOIN Victim v ON c.CrimeID = v.CrimeID
LEFT JOIN Suspect s ON c.CrimeID = s.CrimeID;

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ‡A

CrimeID	IncidentType	VictimName	SuspectName	SuspectCriminalHistory
1	Robbery	John Doe	Robber 1	Previous robbery convictions
2	Homicide	Jane Smith	Unknown	NULL
3	Theft	Alice Johnson	Suspect 1	Prior shoplifting arrests
4	Assault	Michael Johnson	Assailant 1	Previous assault charges
5	Burglary	Sarah Lee	Burglar 1	Prior burglary convictions
6	Vandalism	David Brown	Vandalizer 1	History of vandalism
7	Fraud	Emily Davis	Fraudster 1	Prior fraud arrests
8	Drug Possession	Michael Smith	Drug Dealer 1	Drug trafficking charges
9	Assault	Emma Wilson	Assailant 2	Previous assault charges
10	Robbery	James Taylor	Robber 2	Prior robbery convictions
11	Homicide	Olivia Martinez	Unknown	NULL

15. Find incidents where the suspect is older than any victim.

select c.CrimeID, v.Age, s.SAge from Crime c join Victim v on c.CrimeID=v.CrimeID join Suspect s on v.crimeID=s.CrimeID where Sage>age;

	CrimeID	Age	SAge
▶	1	40	78
	2	37	73
	3	49	50
	4	51	75
	6	29	63
	8	58	63
	12	40	46
	13	19	42

16. Find suspects involved in multiple incidents:

select s.SuspectID, s.Name, c.CrimeID, c.IncidentType from Crime c join Suspect s on C.CrimeID=S.CrimeID;

	SuspectID	Name	CrimeID	IncidentType
▶	1	Robber 1	1	Robbery
	2	Unknown	2	Homicide
	3	Suspect 1	3	Theft
	4	Assailant 1	4	Assault
	5	Burglar 1	5	Burglary
	6	Vandalizer 1	6	Vandalism
	7	Fraudster 1	7	Fraud
	8	Drug Dealer 1	8	Drug Possession
	9	Assailant 2	9	Assault
	10	Robber 2	10	Robbery
	11	Unknown	11	Homicide
	12	Shoplifter 1	12	Theft

17. List incidents with no suspects involved.

SELECT c.* FROM Crime c LEFT JOIN Suspect s ON c.CrimeID = s.CrimeID WHERE s.CrimeID IS NULL;

	CrimeID	IncidentType	IncidentDate	Location	Description	Status

18. List all cases where at least one incident is of type 'Homicide' and all other incidents are of type 'Robbery'.

SELECT c.CrimeID FROM (SELECT CrimeID, COUNT(DISTINCT IncidentType) AS num_types

 FROM Crime GROUP BY CrimeID) AS case_counts

JOIN Crime AS c ON case_counts.CrimeID = c.CrimeID

WHERE num_types = 2 AND c.IncidentType IN ('Homicide', 'Robbery') GROUP BY c.CrimeID

HAVING COUNT(DISTINCT c.IncidentType) = 2;

Result Grid	Filte
CrimeID

19. Retrieve a list of all incidents and the associated suspects, showing suspects for each incident, or 'No Suspect' if there are none.
select c.IncidentType , s.SuspectID,s.CrimeID,s.Name from Crime c Join Suspect s on c.CrimeID=s.CrimeID;

IncidentType	SuspectID	CrimeID	Name
Robbery	1	1	Robber 1
Homicide	2	2	Unknown
Theft	3	3	Suspect 1
Assault	4	4	Assailant 1
Burglary	5	5	Burglar 1
Vandalism	6	6	Vandalizer 1
Fraud	7	7	Fraudster 1
Drug Possession	8	8	Drug Dealer 1
Assault	9	9	Assailant 2
Robbery	10	10	Robber 2
Homicide	11	11	Unknown
Theft	12	12	Shoplifter 1
Fraud	13	13	Fraudster 2

20. List all suspects who have been involved in incidents with incident types 'Robbery' or 'Assault'
select s.* from Suspect s join Crime c on s.CrimeID=c.CrimeID where IncidentType = 'Robbery' or IncidentType = 'Assault';

Result Grid		Filter Rows:		Export:	Wrap Cell Content:
SuspectID	CrimeID	Name	Description	CriminalHistory
1	1	Robber 1	Armed and masked robber	Previous robbery convictions
4	4	Assailant 1	Physical altercation suspect	Previous assault charges
9	9	Assailant 2	Assault suspect	Previous assault charges
10	10	Robber 2	Suspected robber	Prior robbery convictions